

**S.M.1 List of SSR loci, primer sequence and their respective annealing temperature (T °C) used in this study[32].**

Primer	For 5'→ 3'	Rev 5'→ 3'	Size (bp)	T (°C)
<b>H1GT14</b>	CY5-GGCATGGCTAACTCTATATGC	AAATAGAAGTGCCATAACTGA	165	54
<b>H1GT16</b>	CY5-CCGTGATACAAATCTACCCAAA	CTCCAGTCAGCAATCTCTTCAA	228	54
<b>H1GT17</b>	CY5-GGTCCITAGTCACTTGCCAAT	GACTGTTCTGAAGCACAATCAA	182	54
<b>H1ACA3</b>	CY5-CAAGTTGTTGGTTGATTTACAT	CTCCTTCCTGTGTTTACCAC	215	52
<b>H1AGA7</b>	CY5-ACAAGCAGTAATGATGAGGA	TCCAAGTCTCTCAATTAGGAA	180	54
<b>H1GA23</b>	CY5-AAGCACGAAAACGACTTG	GTTGCCCAAAATCACTGTT	245	54

**S.M.2. UPOV Hops morphological descriptors**

Morphological characteristics	Description
Anthocyanin coloration	Absent; weak; medium; strong; very strong
Size of blade	Small; medium; large
Blistering of upper side of blade	Absent; weak; medium; strong
Color of upper side of blade	Yellow; yellow green; green
If green, intensity of green color	Light; medium; dark
Time of flowering	Early; medium; late
Size	Dwarf; normal
Length	Short; medium; long; very long
Length	Short; medium; long
Density of foliage	Sparse; medium; dense
Number of cones per node	Few; medium; many
Total number of cones	Few; medium; many
Total number of cones	Very few; few; medium; many; very many
Picking maturity	Early; medium; late
Size	Small; medium; large
Shape	Cylindric; narrow ovate; medium ovate; broad ovate; circular
Degree of opening of bracts	Closed; just open; clearly open
Intensity of green color	Light; medium; dark
Size	Small; medium; large
Ratio length/width	Small; medium; large
Length of tip	Short; medium; long

Plant part indicated by color: **main shoot**; **leaf**; **flower**; **plant**; **side shoot from middle third of plant**; **side shoot from upper third of plant**; **cones**; **bract**.